

Poster Sessions

10:30 AM and 2:50 PM

The Fate of Mekong Fish and Fisheries

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Abstract/Poster

Mekong, the longest river in Southeast Asia, covers all types of ecosystems in the world except desert, which brings with it the largest fisheries, and the third richest freshwater fish fauna in the world, next to the Amazon and Zaire. The key threats to the fish population are over-fishing and illegal fishing by using at least 150 kinds of gear, but seem to be replaced by dams now. It is generally well known that dams can impact fish and fisheries by habitat fragmentation, flow regulation and obstruction of fish migration. The Mekong is moderately affected by an intensive damming in tributaries and two mainstream huge dams—part of an 8-dam cascade in the Lancang (the Upper Mekong) in China, and the 300-m Xiaowan Dam, the highest dam in the world, which will be completed in 2010.

Fish biodiversity of the Lancang is still an enigma because fish serves as a totem in the Tibetan native religion and the environmental conditions are atrocious there. Both have greatly hindered fishing, as well as research investigations. After reviewing accessible published materials, we found that 162 fish species were recorded in the Lancang, among which 11 were listed as endangered species. Cascade construction can divide the mainstream into several huge reservoirs, and loss of only one species imperiled by habitat disruption will change the ecosystem function of a tropic river.

Cascade can also regulate the natural flow into Tonle Sap Lake (TSL). TSL is important in sustaining the health of fisheries of the Mekong as it is home to a large portion of fish species. The floodplain is the best place for ecological and social benefits to the world. Between the dry and the wet seasons, the volume of the lake increases from about 1.3 km³ up to 75 km³. In the wet season, storage of the upstream reservoirs will delay the onset of the annual flood, and reduce the input of water and sediments into the TSL, adversely affecting the migration triggers and nutrient recycle. In the dry season, sluice of the upstream reservoirs can expand the edge of the lake, possibly threatening dry-season habitats and destroying some flood-forest areas, especially in areas with high fish productivity. Deep pools are the shelter habitats for benthic big carnivorous fishes which often occupy the high position in the food chain of aquatic systems. Loss or shortage of these species will disturb the food-web, and then the ecosystem function. After the completion of the 132-m Manwan Dam in Lancang in 2003, there came an unusually low

dry season flow in the lower Mekong, together with abnormal fluctuations of water level. This phenomenon has been attributed to dam operation in China, and then was disproved by an explanation of a dramatic drought. Actually, China only accounts for 9% of TSL water, lower than Lao PDR and Thailand. Moreover, it is not neglected that hydropower and irrigation projects within the TSL Catchment would significantly impact itself. Obstruction of fish spawning migration by dams is the most focal issue in Mekong development for most of the fisheries are based on migratory fishes. Based on the fish data of the Lancang, we deduce that there are 30 migratory fishes of Mekong existing in Lancang, and most of them can finish migrating periods in three migration systems of the lower Mekong basin. Until now, only three Pangasiid Catfishes were affirmed to migrate up to Buyuan River, a branch of the Lancang near the border. Moreover, according to the Chinese plan, only the last dam of the cascade (the Mengsong Dam, which is still pending) has the chance to hinder the migrating paths, which are already in danger from numerous dams in downstream tributaries.

Too many blames have been forced on Chinese hydropower exploitation, while predicting the effects of cascade is a difficult and long course. To compensate the decline of natural fishery, artificial aquaculture and exotic species stocking are encouraged, and these bring impacts such as replacing native fish species and loss of genetic variation, etc. In order to obtain effective management of the utilization of the Mekong, an intergovernmental body, the MRC (Mekong River Commission), was established in 1995 and cancelled its plan to build a 12-dam cascade on the Mekong mainstream. The shortcoming of MRC must be that China is not included, and the chances of China becoming a full member are remote. In China, the AIRC (Asian International Rivers Center) has an idea to set up a Fish Conservation and Propagation Center (including natural conservation areas, propagation stations, staff training base), if possible, under the support of local governments and Huaneng Power International—China's largest independent power generator—which charges Lancang water resource development. Moreover, scientists in different fields from all over the world should be encouraged to conduct research on Mekong for sustaining fish and fisheries.